

Unexpected tracheal web encountered during difficult intubation in the operating room

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A 60-year-old woman was prepared for revision of a previous anterior lumbar interbody fusion. After induction of anesthesia, three attempts to pass decreasing sizes of endotracheal tubes remained unsuccessful. An LMA Fastrach was inserted to maintain ventilation. Upon examination of the trachea with a flexible fiberoptic bronchoscope via the LMA Fastrach, a tracheal web was visualized 1 cm below the true vocal cords. Intraoperative excision of the tracheal web by an otolaryngologist allowed for the passage of an endotracheal tube and the continuation of the planned surgery.

Obstruction to endotracheal intubation can have many causes, such as trauma, infection, foreign bodies, tumor, or tracheal stenosis (1). This article describes a patient with an unexpected tracheal web causing obstruction to endotracheal intubation after induction of anesthesia in the operating room.

CASE REPORT

A 60-year-old, 100-kg woman was scheduled for revision of an anterior lumbar interbody fusion. Her past medical history was significant for a previous anterior and posterior fusion of the lumbar spine a year earlier, which was complicated by a stroke. Her trachea had been kept intubated for 1 week postoperatively. She subsequently developed seizures, which were being controlled with levetiracetam. Within the year, she was diagnosed with asthma and was placed on an albuterol inhaler. She also had a history of vasculitis that was diagnosed prior to the original surgery, for which she took prednisone.

Before transport to the operating room, she received midazolam 2 mg intravenously for sedation. Upon arrival at the operating room, standard American Society of Anesthesiologists monitors were placed. After preoxygenation, intravenous induction was accomplished with sufentanil 10 mcg, lidocaine 50 mg, propofol 200 mg, and rocuronium 50 mg.

Easy mask ventilation was performed for 2 minutes. Direct laryngoscopy was accomplished with a Macintosh blade, size 3. The laryngoscopy view was a grade I according to Cormack and Lehane's grading scale. An initial attempt to pass a cuffed endotracheal tube (ETT) size 7.0 mm beyond the true vocal

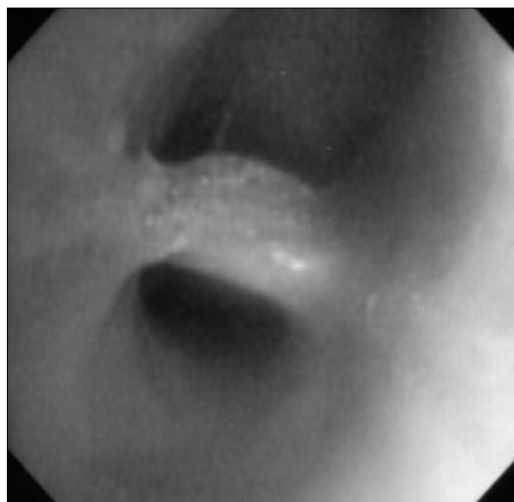


Figure. Tracheal web seen below the vocal cords with a fiberoptic bronchoscope.

cords encountered resistance. Similar resistance occurred with ETT sizes of 6.5 mm and 6.0 mm.

At this time, an LMA Fastrach was inserted to mechanically ventilate the patient. Anesthesia was maintained with 2% sevoflurane and 100% oxygen. A flexible fiberoptic bronchoscope was passed via the LMA Fastrach, and a tracheal web was visualized 1 cm below the true vocal cords (*Figure*).

An otolaryngologist was consulted to evaluate the tracheal web in the operating room. Upon arrival of the otolaryngologist, the LMA was removed and a laryngoscope was introduced. The consultant determined that the tracheal web could be easily excised to allow endotracheal intubation. After consent was obtained from the patient's husband, the web was excised. A rigid bronchoscope was utilized to complete the removal of the web, and mitomycin-C was topically applied to reduce scar formation.

The patient was subsequently intubated with an ETT size 6.5 mm. Dexamethasone 8 mg intravenously was given to re-

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duce edema. The planned surgery proceeded without complications. At the conclusion of surgery, the patient's trachea was extubated uneventfully, and she did not have any respiratory complications throughout her hospital course.

DISCUSSION

Unsuspected laryngeal webs creating difficult intubating conditions in the operating room have been characterized as rare (2). It has been reported that 75% of laryngeal webs occur at the level of the vocal cords, and the remainder are in the subglottic or supraglottic location (2). Patients can have symptoms such as stridor and dyspnea. Furthermore, patients are often misdiagnosed as having asthma or chronic obstructive pulmonary disease (3). Tracheal webs have been described in children at an incidence of 1 in 10,000 births (3). In adults, tracheal webs have been reported in patients after intubation (4).

The LMA Fastrach was vital in this situation to maintain ventilation and to allow fiberoptic evaluation of the larynx. Cankaya et al (5) described this technique in the evaluation and diagnosis of congenital laryngeal webs in children. Similarly, Chong et al (2) recommended delivering anesthesia with an LMA in patients with a laryngeal web.

The tracheal web in this patient was most likely caused by her previous prolonged endotracheal intubation. Kokkonouzis et al (4) described a possible mechanism of inflammatory cells forming fibrotic tissue, resulting in a tracheal web.

This case stresses the importance of not advancing ETTs when resistance is encountered in order to avoid trauma. The airway can be managed in patients with an unsuspected tracheal web by using different sizes of ETTs, using an LMA, or waking up the patient and postponing the surgery until further evaluation. Of note, the patient indicated improvement of her asthma symptoms 1 week after surgery.

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